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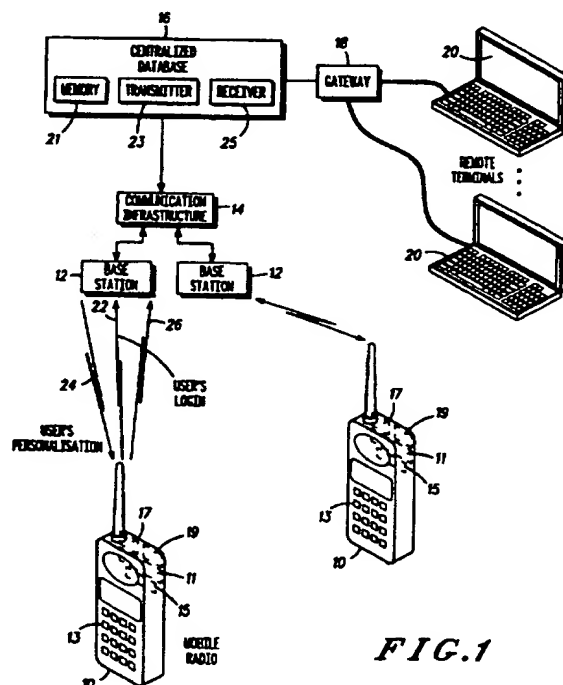
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(58) Field of Search  
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## (54) Personalised radio communications

(57) Personalising the operation of a radiotelephone 10 in a radio communications system is provided. The method includes storing respective operational characteristics of a plurality of users in a memory element. Operational characteristics are selected from the memory element for a respective user of the radio communications unit 10 and programmed into the radio communications unit 10. Operational characteristics can be on a system level or simply define the functions of the portable unit such as abbreviated dialling and call barring.



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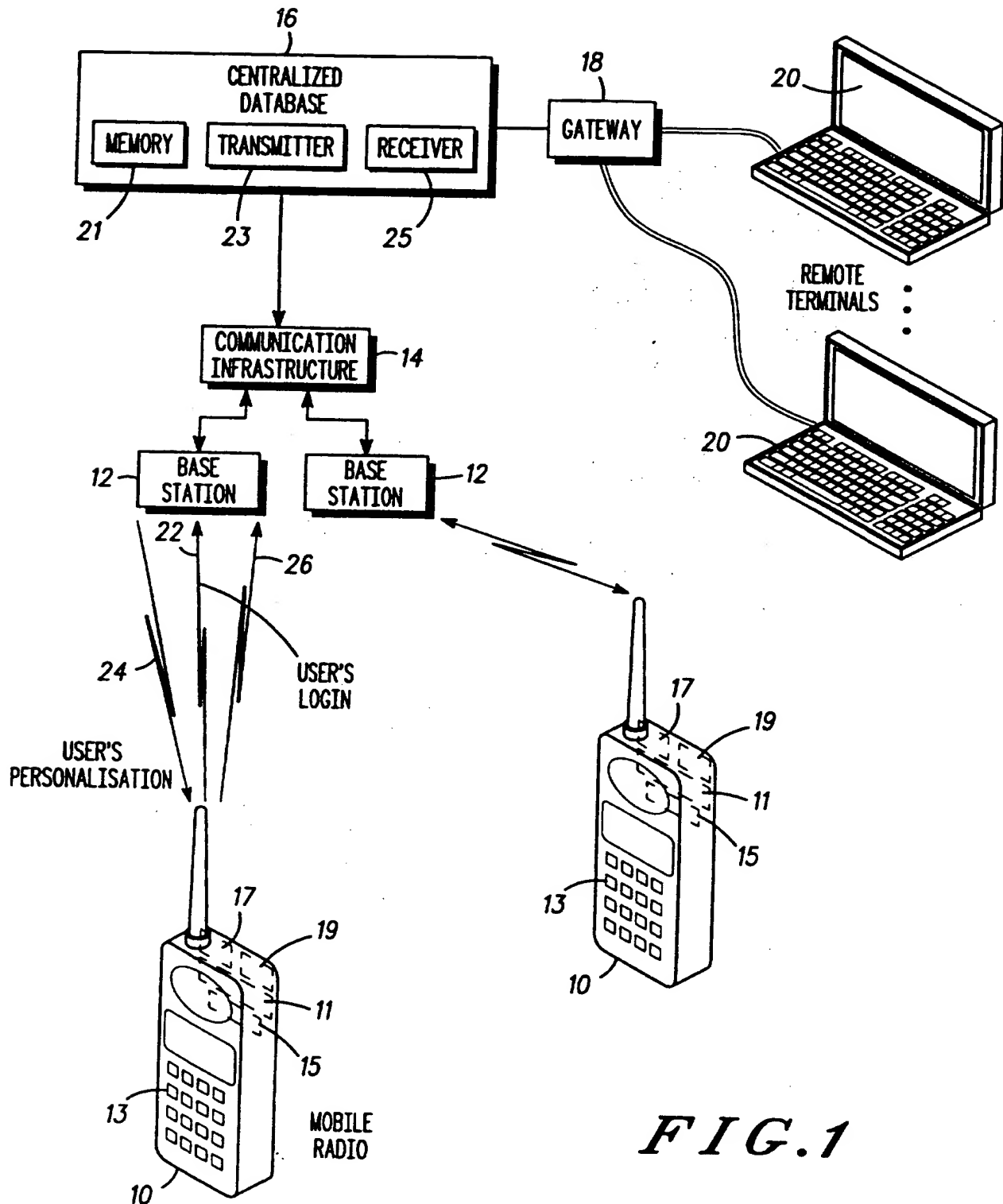
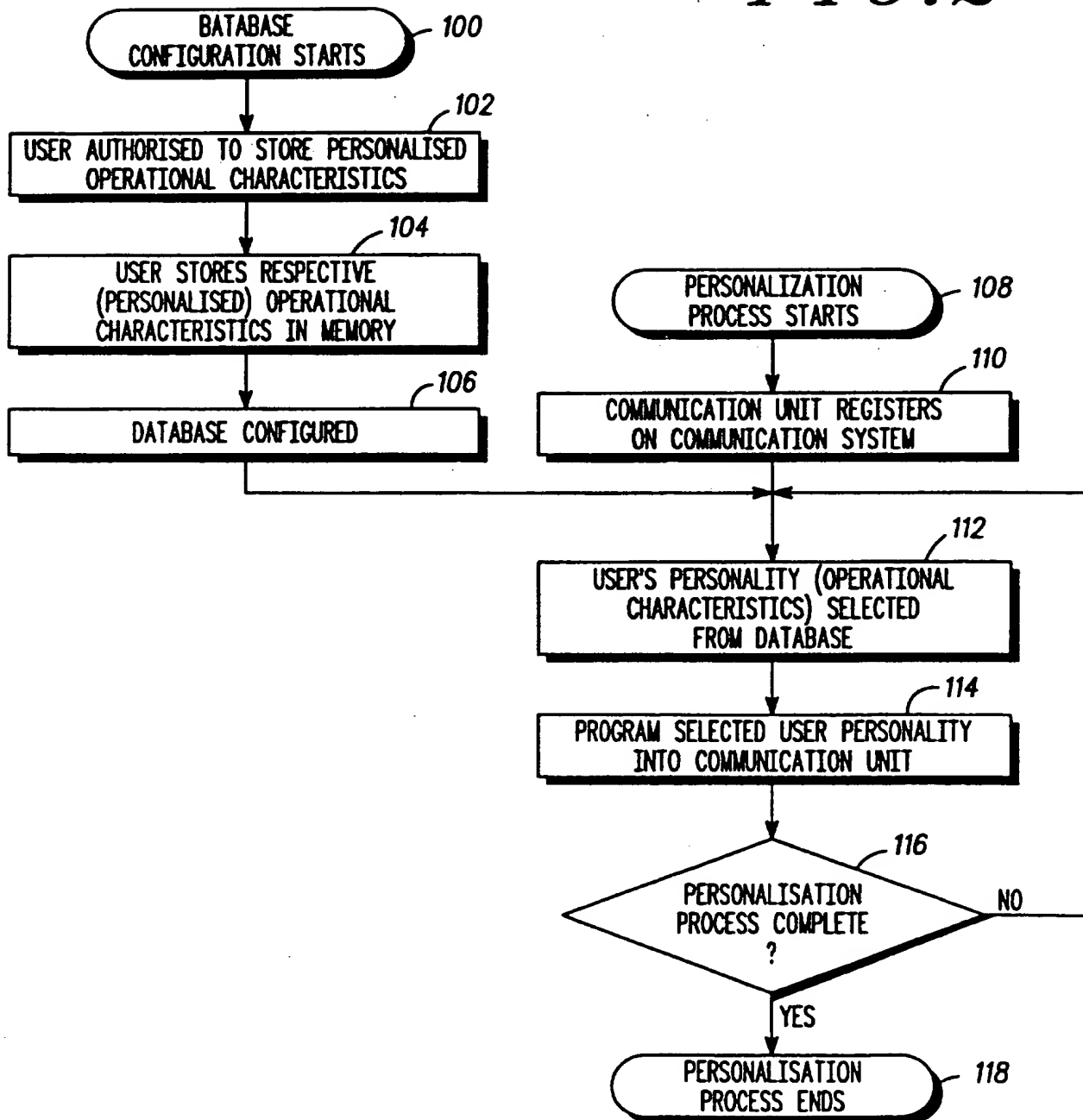


FIG. 2



## PERSONALISED RADIO COMMUNICATIONS AND METHOD OF OPERATION

### Field of the Invention

5 This invention relates to radio communications units of radio communications systems and, in particular, to the personalisation of such radio communications units. The invention is applicable to, but not limited to, radio communications units that are shared between users.

### Background of the Invention

10 A number of users of radio communications systems have shown an interest in having an inventory of mobile radios whose functionality can be customised to the requirements of a specific user, by virtue of the user inputting unique information into the mobile radio to personalise the radio's operation. Other radio system users have shown an interest in centralising the radio personalisation process, so as to reduce time spent at service depots having a mobile radio re-programmed.

15 It is known in the art for mobile telephone units to use external devices such as smart cards for personalising the operation of mobile telephones. This allows a smart card user to use the mobile telephones of other users and, whilst using their mobile telephone, personalise it for their use and be billed accordingly. Such external devices typically have non-volatile memory that is programmed with information unique to the owner of the external device.

20 A problem associated with using such external devices for personalising the operation of mobile radio communications units is that the device and associated connector add cost and complexity to the product and potentially can detract from the quality, ruggedness and desired size. The external device has to be uniquely programmed for each user and then distributed and subsequently re-programmed as necessary. Being a separate physical component the external device can be lost or stolen.

25 Thus, it is desirable to have an improved method for personalising radio communications and a radio communications system and radio communications units to accommodate such improvements.

### Summary of the Invention

In a first aspect of the present invention, a method for personalising the operation of a radio communications unit, is provided. The method for personalising at least one operation of a radio communications unit in a radio communications system includes storing respective operational characteristics for a plurality of users in a memory element. At least one operational characteristic for a respective user is selected for the radio communications unit from the memory element and programmed in the radio communications unit.

In this manner, a particular user from a number of potential users of the radio communications unit personalises the operation of the radio communications unit for their particular needs.

Advantageously, the operational characteristics may be stored either in the central unit, reducing the memory requirements of the radio communications unit, or in the radio communications unit or distributed between memory elements in both the radio communications system and the radio communications unit.

In a second aspect of the present invention, a radio communications system is provided. The radio communications system includes a central unit and at least one radio communications unit. The central unit has a memory element for storing respective operational characteristics of a plurality of users and a transmitter for transmitting at least one respective operational characteristic. On receiving a valid personalisation request from a user the central unit accesses at least one respective operational characteristic from the memory element and transmits the at least one respective operational characteristic to the radio communications unit. The at least one radio communications unit has a receiver for receiving the at least one respective operational characteristic of the user and a processing device for programming the at least one respective operational characteristic in the radio communications unit.

In this manner, the radio communications system is arranged to facilitate the user-defining/ personalisation of radio communications unit operating on the radio communications system for particular users.

Advantageously, no extra signalling, related to the personality of the radio communications unit, needs to be transmitted over-the-air.

In a third aspect of the present invention, a radio communications unit is provided. The radio communications unit includes a memory element containing respective operational characteristics of a plurality of users and a

processing device for programming at least one respective operational characteristic of a particular user into the radio communications unit.

In this manner, the personalisation of the radio communications unit is self-contained and each potential user of the radio communications unit  
5 can configure the operation of the radio communications unit according to their respective needs. Advantageously, no external device is required.

A preferred embodiment of the invention will now be described, by way of example only, with reference to the drawings.

## 10 Brief Description of the Drawings

FIG. 1 is a block diagram of a radio communications system according to a preferred embodiment of the invention.

FIG. 2 is a flow chart of a process for personalising radio  
15 communications units of the radio communications system according to a preferred embodiment of the invention.

## Detailed Description of the Drawings

20 Referring first to FIG. 1, a block diagram of a radio communications system is shown, according to a preferred embodiment of the invention. The radio communications system includes a central unit, e.g. a centralised database 16, and at least one radio communications unit, e.g. a mobile radio unit 10. The central unit has a memory element 21 for storing respective  
25 operational characteristics of a plurality of users, a transmitter 23 for transmitting at least one respective operational characteristic and a receiver 25 for receiving personality requests. On receiving a valid personalisation request from a user of a radio communications unit, the central unit accesses at least one respective operational characteristic from the memory element  
30 21 and transmits the at least one respective operational characteristic to the radio communications unit. The radio communications unit has a receiver 19 for receiving the at least one respective operational characteristic for the user, a transmitter 17 for transmitting login requests 22 and a personalisation request command 26 to the radio communications system and  
35 a processing device 15 for programming the at least one respective operational characteristic in the radio communications unit.

In the preferred embodiment of the invention, shown in FIG. 1, the radio communications system comprises a number of mobile radio units 10 communicating to a number of base stations 12. The base stations are

operably coupled to a radio communications infrastructure 14 of the radio communications system. The radio communications infrastructure 14 is operably coupled to a centralised database 16, which is connected to a gateway 18. The gateway is operably coupled to a number of remote terminals 20.

In operation, the user of one of the mobile radio units 10 registers as the current user, e.g. by entering a unique code such as a personalised identity number (PIN), via the front panel controls 13. The mobile radio unit 10 transmits this registration (user login) 22 to the radio communications infrastructure 14 via the a base station 12. At this point the radio communications infrastructure may employ some security checking if desired. If the registration information is valid, the mobile radio unit 10 then transmits a personality request command 26 to the central unit and at least one operational characteristic, pertinent to the registered user, is accessed from the memory element 21 of the centralised database 16 and transmitted to the mobile radio unit 10. The operation of the radio communications system and/or the mobile radio unit 10 is then configured as desired by the respective user.

If the stored respective operational characteristics are to be used to configure the mobile radio unit 10, the radio communications infrastructure 14 transmits at least one personalised operational characteristic 24 via the aforementioned base station 12 to the mobile radio unit 10. In this manner, the mobile radio unit 10, is customised to the requirements of the particular user. If the stored respective operational characteristics are to be used to configure the operation of the radio communications system, the radio communications infrastructure 14 receives the respective operational characteristic and configures the system operation of the mobile radio unit 10 accordingly. A benefit of this radio communications system arrangement is that the operational characteristics may be stored either in the central unit, reducing the memory requirements of the radio communications unit, or in the radio communications unit or distributed between memory elements in both the radio communications system and the radio communications unit.

In an alternative embodiment the radio communications unit is a mobile radio unit 10 having a memory element 11 that contains the respective operational characteristics of a plurality of users. The mobile radio unit 10 includes a processing device 15, operably coupled to the memory element 11, for programming at least one respective operational characteristic of a particular user into the radio communications unit. Thus, in the alternative embodiment, the respective operational characteristics are

self-contained within the radio communications unit and no extra signalling related to the personality of the radio communications unit needs to be transmitted over-the-air.

Referring now to FIG. 2, a flow chart of a process for personalising radio communications units of the radio communications system is shown according to a preferred embodiment of the invention. The process includes personalising at least one operation of a radio communications unit in a radio communications system by storing respective operational characteristics for a plurality of users in a memory element. At least one operational characteristic is selected from the memory element for the radio communications unit for a respective user and programmed in the radio communications unit.

In the preferred embodiment, the radio communications unit communicates to a central unit comprising a containing the memory element. A registration request of the respective user is validated at the radio communications unit or at the central unit. A personality request command is transmitted from the radio communications unit to the central unit and at least one operational characteristic for the respective user is selected for the radio communications unit from the memory element. The selected at least one operational characteristic is transmitted from the central unit to the radio communications unit where it is received and programmed in the radio communications unit.

Preferably, the registration request includes a respective user registering on the radio communications unit by inputting a personalised identity number into the radio communications unit and/or the radio communications unit registers on the radio communications system in order to access the operational characteristics stored in the memory unit. The memory unit resides at the radio communications unit and/or the central unit of the radio communications system. The operational characteristics relate to the operation of the radio communications unit and/or the radio communications system and may include at least one of the following: individual call identities, group call identities, call barring details and short form dial numbers.

In FIG. 2, the database is configured as shown in steps 100 to 106. A user receives authorisation to store personalised operational characteristics in step 102 and stores their respective operational characteristics in a memory element, as shown in step 104. Once the database is configured for that particular user, as in step 106, a personalisation process for the user on a radio communications unit can occur, as shown in steps 108 to 118.



Registration is performed, as in step 110. The registration includes the user registering on the radio communications unit and /or the radio communications unit registering on a radio communications system. The user's personality e.g. at least one operational characteristic, is accessed from the database as shown in step 112 and the personality programmed in the radio communications unit as in step 114. If the personalisation process is complete, as in step 116, the personalisation process of the radio communications unit for operation by the authorised user is completed as shown in step 118. If more operational characteristics are to be programmed into the radio communications unit the process returns to step 112. The process of programming the operational characteristics /personality of the particular user preferably includes configuring the operation of the radio communications unit and /or the radio communications system according to the user's requirements. Hence, no external device is required to facilitate the personalisation process.

Thus, an improved method for personalising radio communications units is provided. In addition, a radio communications unit and a radio communications system are provided that facilitate the improved personalising of radio communications units.

## Claims

1. A method for personalising at least one operation of a radio communications unit in a radio communications system, the method comprising the steps of:
  - storing respective operational characteristics for a plurality of users in a memory element;
  - selecting at least one operational characteristic for the radio communications unit from the memory element for a respective user; and
  - programming the at least one operational characteristic in the radio communications unit.
2. The method of claim 1, wherein the memory element resides in the radio communications unit.
3. The method of claim 1, wherein the radio communications unit communicates to a central unit containing the memory element, wherein the step of selecting at least one operational characteristic for the radio communications unit from the memory element by a respective user, includes the steps of:
  - validating a registration request of the respective user;
  - transmitting a personality request command from the radio communications unit to the central unit;
  - selecting at least one operational characteristic of the radio communications unit from the memory element for the respective user;
  - transmitting the selected at least one operational characteristic from the central unit to the radio communications unit; and
  - receiving the transmitted at least one operational characteristic at the radio communications unit.
4. The method of claim 3, wherein the central unit is operably coupled to a remote terminal and the remote terminal is used for storing respective operational characteristics for the plurality of users in the memory element of the central unit.
5. The method of claim 3, wherein the step of validating a registration request includes the respective user registering on the radio communications unit by inputting a personalised identity number into the radio communications unit.

6. The method of claim 3, wherein the step of validating a registration request includes the radio communications unit registering successfully on the radio communications system.

5 7. The method of claims 3 to 6, wherein the operational characteristics relate to an operation of at least one of the following: the radio communications unit and the radio communications system.

10 8. The method of any of the preceding claims wherein the operational characteristics include at least one of the following: individual call identities, group call identities, call barring details and short form dial numbers.

9. A radio communications system comprising:  
a central unit having a memory element for storing respective  
15 operational characteristics of a plurality of users, a receiver for receiving a personalisation request command, a transmitter for transmitting at least one respective operational characteristic on receiving a valid personalisation request from a user, wherein the central unit accesses at least one respective operational characteristic from the memory element and transmits the at  
20 least one respective operational characteristic; and  
at least one radio communications unit comprising a receiver for receiving the at least one respective operational characteristic for the user, and a processing device for programming the at least one respective operational characteristic in the at least one radio communications unit.

25 10. The radio communications system of claim 9 wherein the operational characteristics relate to an operation of at least one of the following: the radio communications system and the radio communications unit.

30 11. A radio communications unit comprising:  
a memory element containing respective operational characteristics of a plurality of users; and  
a processing device for programming at least one respective operational characteristic of a user into the radio communications unit.

35 12. The radio communications system of claim 10 or the radio communications unit of claim 11, wherein the operational characteristics include at least one of the following: individual call identities, group call identities, call barring details and short form dial numbers.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**(The Search report)**

Application number  
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**Relevant Technical Fields**

(i) UK Cl (Ed.N) H4L - (LECC, LDLX) H4K - (KF42)

(ii) Int Cl (Ed.6) H04Q - (7/32, 7/20), H04M - (3/42, 3/44)

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE: WPI

Search Examiner  
 P S DERRY

Date of completion of Search  
 16 NOVEMBER 1995

Documents considered relevant following a search in respect of Claims :-  
 1-12

**Categories of documents**

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| <p><b>X:</b> Document indicating lack of novelty or of inventive step.</p> <p><b>Y:</b> Document indicating lack of inventive step if combined with one or more other documents of the same category.</p> <p><b>A:</b> Document indicating technological background and/or state of the art.</p> | <p><b>P:</b> Document published on or after the declared priority date but before the filing date of the present application.</p> <p><b>E:</b> Patent document published on or after, but with priority date earlier than, the filing date of the present application.</p> <p><b>&amp;:</b> Member of the same patent family; corresponding document.</p> |
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Category	Identity of document and relevant passages	Relevant to claim(s)
Y	GB 2198011 A (A T & T) see whole document	All
X	WO 95/14360 A1 (NOKIA) see especially the Abstract	1, 9-11 at least
Y	WO 92/17943 A1 (MOTOROLA) see Abstract	All

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